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PLANT IMMIGRANTS

No. 176. DECEMBER, 1920.

GENERA REPRESENTED IN THIS NUMBER.

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275. Cluster of fruits of the macauba palm (*Acrocomia sclerocarpa*).
276. A remarkable edible palm fruit, the pejibaye (*Guilielma utilis*).

Foreign Seed and Plant Introduction

EXPLANATORY NOTE.

This multigraphed circular is largely made up from notes received from agricultural explorers, foreign correspondents, cooperators, and others, relative to the more important plants which have recently been received by the Office of Foreign Seed and Plant Introduction of the Department of Agriculture; in it are also contained accounts of the behavior in America of plants previously introduced. Descriptions appearing here are revised and published later in the Inventory of Seeds and Plants Imported.

Applications from experimenters for plants or seeds described in these pages may be made to this Office at any time. As they are received the requests are placed on file and when the material is ready for the use of experimenters it is sent to those who seem best situated and best prepared to care for it. The plants or seeds here described (except such as are distributed direct or are turned over to specialists in the Department who are working on investigational problems) are propagated at our Plant Introduction Field Stations; and when ready to be distributed are listed in our annual check lists, copies of which are sent to experimenters in the late fall. It is not necessary, however, to await the receipt of these lists should one desire to apply for plants which are described herein.

One of the main objects of the Office of Foreign Seed and Plant Introduction is to secure material for plant breeders and experimenters. Every effort will be made to fill specific requests for experimental quantities of new or rare foreign seeds or plants.

David Fairchild.
Agricultural Explorer in Charge

Office of Foreign Seed and Plant Introduction,
Bureau of Plant Industry,
U. S. Department of Agriculture.

Issued Feb. 28, 1921. Washington, D.C.

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Bambos balcooa (Poaceae), 51361. **Bamboo.** From Lucknow, Oudh, India. Seeds presented by Mr. H. J. Davies, superintendent, Government Horticultural Gardens, through Mr. W. Bembower, Allahabad Agricultural Institute. The large and characteristic bamboo of the Bengal villages, native to the plains of the eastern side of India, extending from Bengal into Assam and Cachar. It differs chiefly from *B. tulda* in its larger leaves which are not pubescent and which have distinct transverse veins. It is also taller and stouter, the stems often reaching the height of 70 feet. The joints of the rachis are short and glabrous. This is the best Bengal species for building, scaffolding, and other works which require both size and strength. Long immersion in water tends to make the timber firmer and proof against the attacks of the borer, Bostrychus. (Adapted from Watt, Dictionary of the Economic Products of India, vol. 1, p. 39.)

Calamus scipionum (Phoenicaceae), 51708. **Rattan palm.** From Buitenzorg, Java. Seeds presented by the director, Plant Breeding Station. The typical form of this rattan is 40 to 60 feet in height, with alternate, pinnatisect leaves 4 to 5 feet long; the male spadix is 20 feet long and the female 10 feet; the small ovoid fruits are about one-third of an inch in diameter. This rattan is native to Malaysia, where the canes are employed for making furniture, etc., for which purpose it is especially suitable because of the ease with which it splits. (Adapted from Heyne, Nuttige Planten van Nederlandsch-Indie, vol. 1, p. 89; and Hooker, Flora of British India, vol. 6, p. 461.)

Dioscorea sp. (Dioscoreaceae), 51426. **Yam.** From Nicaragua. Tuber presented by Dr. Luis Sequeira, Bluefields. "'Papa cariba' or 'carib potato,' which grows wild in this country. The vines bear twice a year, and the tubers are eaten in the same way as the Irish potato. The vine bears from 20 to 50 tubers, chiefly kidney-shaped, and weighing from 6 ounces to a pound and a half." (Sequeira.)

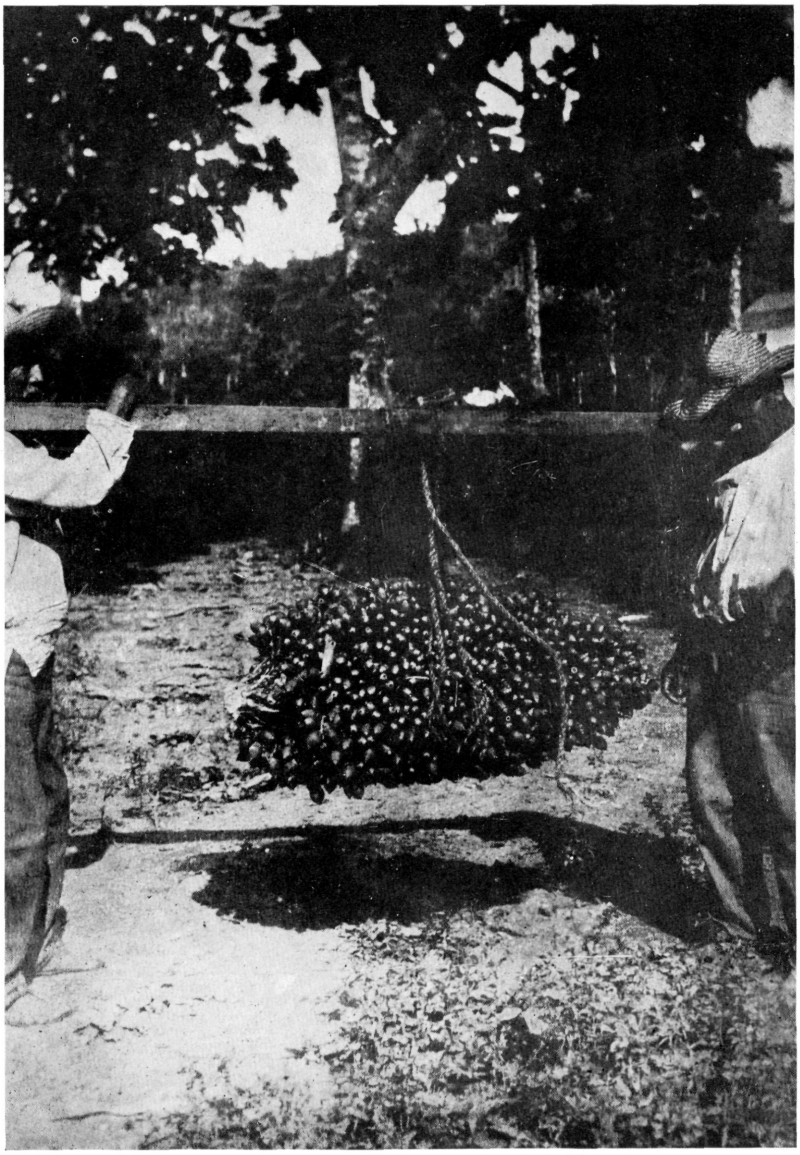
"This yam appears to be of the same kind as the 'caissara,' or 'turkey-liver yam,' previously received from Brazil. The tubers are aerial." (R. A. Young.) (See S.P.I. No.47564, Plant Immigrants No. 160, August, 1919, p. 1469.)

Hydnocarpus wightiana (Flacourtiaceae), 51362. From Calcutta, India. Seeds presented by Mr. Harold R. Foss, American consul in charge. A common tree of the western Peninsula from the Konkan along the coast ranges of India. The seeds yield by expression, or by boiling in water, about 44 per cent of a tasteless, odorless, sherry-yellow oil which is chiefly used as a lamp oil in Goa. The seed has long been employed by the natives of the western coast ranges as a domestic remedy in skin diseases and as a dressing for wounds and ulcers. The oil is now used as an ingredient in a mixture for similar purposes. Used internally in doses of 15 minims to 2 drachms, the oil has given satisfactory results as a substitute for the more expensive chaulmoogra oil in the treatment of leprosy. It is also used in the same way to treat secondary syphilis and chronic rheumatism. (Adapted from Watt, Dictionary of the Economic Products of India, vol. 4, p. 308.)

Latania loddigesii (Phoenicaceae), 51721. **Palm.** From Buitenzorg, Java. Seeds presented by the director, Plant Breeding Station. A very robust palm, native to Mauritius, up to 50 feet in height. The hairy leafstalks are 3 to 4 feet long, and the blades of the whitish, fan-shaped leaves are 3 to 5 feet in length. This species is cultivated throughout the tropics, and when young makes a very decorative pot-plant. (Adapted from Rock, Ornamental Plants of Hawaii, p. 33.)

Pandanus polycephalus (Pandanaceae), 51730. **Screwpine.** From Buitenzorg, Java. Seeds presented by the director, Plant Breeding Station. An East Indian screw pine with leaves about 3 feet long and 2 inches wide. The natives eat the young snow-white leaves, which are tender and sweet, and also the unopened flower-heads. (Adapted from Heyne, Nuttige Planten van Nederlandsch-Indie, vol. 1, p. 29.)

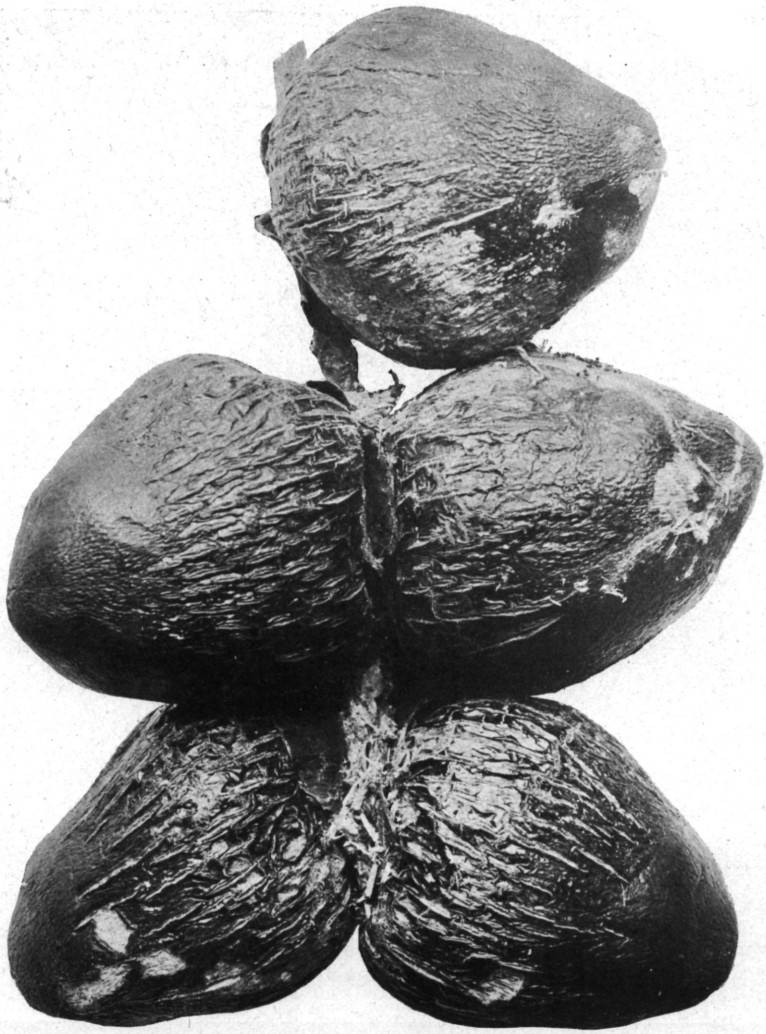
Ullucus tuberosus (Basellaceae), 51403. From Bogota, Colombia. Tubers collected by Mr. Wilson Popenoe, agricultural explorer. "No. 448. The 'chugua' is one of the root-crops which has been cultivated by the Indians of the Andes since prehistoric times. The plant is a slender creeper, making stems 2 or 3 feet in length which trail over the ground. It matures in about 6 months, and may be planted (here in Colombia) at any season of the year. The tubers resemble in form small potatoes, but are rosy-red or light yellowish-



CLUSTER OF FRUITS OF THE MACAUBA PALM.

(*Acrocomia sclerocarpa* Mart. See S. P. I. No. 37382.)

The kernels of these nuts contain 60 per cent of excellent oil, which is well suited for the finer uses of industry and also as a table oil. The ornamental, elegantly formed palm is from 33 to 49 feet in height and bears about 80 quarts of nuts a year. An acre of ground planted to this palm would yield $100 worth of palm fruits. (Photographed by B. H. Hunnicutt, Lavras, Minas Geraes, Brazil, July 26, 1918; P25449FS.)



A REMARKABLE EDIBLE PALM FRUIT—THE PEJIBAYE OF COSTA RICA.

(*Guilielma utilis* Oerst., S. P. I. No. 50679.)

The Costa Rican Indians are said to have cultivated this palm since a remote period, and it is not now known in the wild state. In the markets of San Jose the fruits are in great demand and command a high price. A single palm produces from 100 to 150 pounds per crop. Seedless varieties are known, and the establishment of superior forms should be simple. According to an analysis in San Jose, 1 pound of fruit represents 1,096 calories of energy. The fruit contains about 40 per cent of carbohydrates. (Photographed, from fruits sent in by Wilson Popenoe, at the Photographic Laboratory, by E. L. Crandall, July 19, 1920; P26249FS.)

green. They are oval, and rarely over 3 inches long. The 'chaugua' is usually boiled with meat, or it forms one of the ingredients of a vegetable stew. The plant thrives in light soil with plenty of moisture." (Popenoe.)

Dr. Shantz's Explorations in Africa.

An example of the exploration and research for new plants available for cultivation in this country is furnished by the recent 9,000-mile exploring trip taken by Dr. H. L. Shantz, agricultural explorer, botanist of this Office, with the Smithsonian African Exploration. The principal purpose of Dr. Shantz's trip was to study the native agriculture with an eye for new fruits, nut plants, forage crops (especially those adapted to our South and West), new sorghums, and especially wild sorghum grasses of types similar to Sudan grass, (*Holcus sorghum sudanensis*) which has proved such an important forage crop in the semi-arid districts of the western part of the United States that $10,000,000 worth of it was grown last year.

The party, which left New York, July 16, 1919, sailed directly to the Cape Verde Islands off the coast of Africa, and from there to Cape Town, where they arrived August 13. From there the journey of nearly 9,000 miles was made almost entirely through the heart of Africa, sometimes 1,000 miles inland, with occasional expeditions to the coast for observations of Zanzibar and other islands, and at Lourenzo Marques and Beira.

The expedition has given to the Department of Agriculture a rather intimate knowledge of agriculture, not only of the whites but of the native tribes, of the regions visited. Many of the practices there observed will doubtless prove helpful in connection with practice in this country. Dr. Shantz also formed the acquaintance of many agriculturists and men in various sections of the Dark Continent who can in the future be useful to the Department by sending in plants which are desirable and which could not otherwise be secured. The direct tangible results consist of seeds or living material of more than 1,600 different species or varieties of plants, many of which had not been previously imported into the United States, and from which it is only reasonable to suppose some important grain, forage, or fruit crops may be developed.

Ground for such belief is furnished by past records,

notably the work of the late Frank N. Meyer, who sent thousands of plants from China, many of which even now rank among our most desirable products. The large tamopan persimmon (*Diospyros kaki*) from China, now commonly seen on the market, and the Chinese jujube (*Ziziphus jujuba*), are among his introductions. From Africa have been introduced the long-staple Egyptian cotton (*Gossypium barbadense*), Sudan grass (*Holcus sorghum sudanensis*), Rhodes grass (*Chloris gayana*), and many of the more important Kafir corns and sorghums (*Holcus sorghum*), crops which mean approximately $50,000,000 in crop values to the United States each year, and the development of semi-arid lands not adapted to previously grown agricultural crops.

In Cape Colony, Dr. Shantz went east to Port Elizabeth, where the famous "Addo bush" occurs. Many plants were secured, one of the most interesting being the speckboom (*Portulacaria afra*) which covers whole hillsides with its succulent growth, and is one of the most important foods of the elephant; it is relished by cattle and sheep, and there is a chance of its becoming of value in Southern California. It is probable that speckboom will grow under practically the same conditions as the utterly worthless chapparal of southwestern California.

Dr. Shantz then passed northwest over the Karroo Desert, similar to that in the Great Basin of the United States, but differing in the respect that most of the plants form excellent forage for sheep, cattle, and ostriches, and it seems probable that some of the more desirable of these desert plants may be utilized in our desert country to improve the range.

In the great Transvaal agricultural area, corn (*Zea mays*), known as "mealies," is the chief crop. One of the most important varieties is our own "Boone County White," a gift from America of considerable value to the farmers of the Transvaal.

In the low veldt at Nelspruit are large orchards of subtropical trees and fruits, many varieties of which have not been grown in the United States. It is hoped that an arrangement will be made whereby they can be secured for test in this country. Among them are some particularly desirable mangoes (*Mangifera indica*), adaptable to Florida.

The route then lay to the seacoast at Lourenco Marques and by ocean steamer to Beira. Dr. Shantz arranged with the agriculturist there to get some desirable East African mangoes which the Department has wanted for several years.

At Victoria Falls many of the fruits concerning which Livfngstone wrote enthusiastically were found and tested and the seeds sent to the Department in the hope that they might prove useful here.

The Congo was particularly interesting to the agricultural explorer because of the immense number of wild sorghum grasses which were found all along the line, the plants cultivated by the natives, and the rather unique native methods of agriculture.

The finest mangoes yet found were at Lake Tanganyika, also many interesting types of beans (*Phaseolus vulgaris*) castor beans (*Ricinus communis*), cassava (tapioca) (*Manihot esculenta*), and many wild grasses which may prove to be of forage value in the southern parts of the United States.

A visit to the new Belgian territory of Urundi offered opportunity to study probably the finest grazing land in all Africa. This region supports millions of natives who rely almost entirely upon the cattle which graze upon the natural grasses of this great upland country.

At Tabora, farther east, known as the home of the mango, wonderful trees and fruits were found. At Dar-es-Salam the cocoanut palm is one of the most important crops and has been planted on the sandy lands which extend for many miles back from the coast.

In Zanzibar, principally noted for the production of cloves and for the extensive groves of cocoanut palm and many tropical and subtropical plants, Dr. Shantz obtained and sent home seeds and plants of a number of important fruits, and also many of the staple grains and legumes grown in various parts of the East Coast of Africa and sold on the Zanzibar market.

Returning to the mainland of Tanga, Dr. Shantz proceeded across Tanganyika Territory to near Kilimanjaro, one of the most wonderful mountains in the world, at the base of which is a very rich agricultural country. Here are great plantations of sisal, rubber, coffee, and many important forage grasses.

An extensive trip was also made into the desert country north and east of Mount Kenia, and the principal varieties of tropical crops grown by the natives in this section were secured. Dr. Shantz also found here a notable nut plant, *Telfairia pedata*, which forms a large gourd 2 or 3 feet long containing many large flat seeds, about the size of a silver dollar and a quarter of an inch thick, of a delicous nutty flavor something like that of our butternut. Although this plant has

not yet been tried in this country, it seems probable that it can be grown here, and certainly in the Philippines and possibly in Hawaii and Porto Rico.

The trip west to Lake Victoria across Uganda and down to the Sudan was through a region comparatively little known by our Department, but where many of our crops are grown, and which undoubtedly can supply many native plants of importance in the future development of our agriculture.

The trip down the Nile from the very headwaters of Ripon Falls was most interesting because of the immense development of native grasses and grain sorghums which almost everywhere line the bank of the Nile. Seeds of these plants were secured at many different stations.

The African expedition ended at Port Sudan, September 2, 1920. Dr. Shantz brought with him about 3,000 photographs in addition to the many plant specimens.

Much of this plant material is now growing in the various plant introduction gardens of the Department preparatory to being distributed later to experiment stations and special experimenters in different parts of the country. (Adapted from the Weekly News Letter, vol. 8, No. 20, p. 1.)

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BUREAU OF PLANT INDUSTRY
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